Article:
Li, H, Dong, H, Jiang, H et al. (8 more authors) (2022) Integrated conodont biostratigraphy and δ¹³Ccarb records from end Permian to Early Triassic at Yiwagou Section, Gansu Province, northwestern China and their implications. Palaeogeography, Palaeoclimatology, Palaeoecology, 601. 111079. ISSN 0031-0182

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Figure1

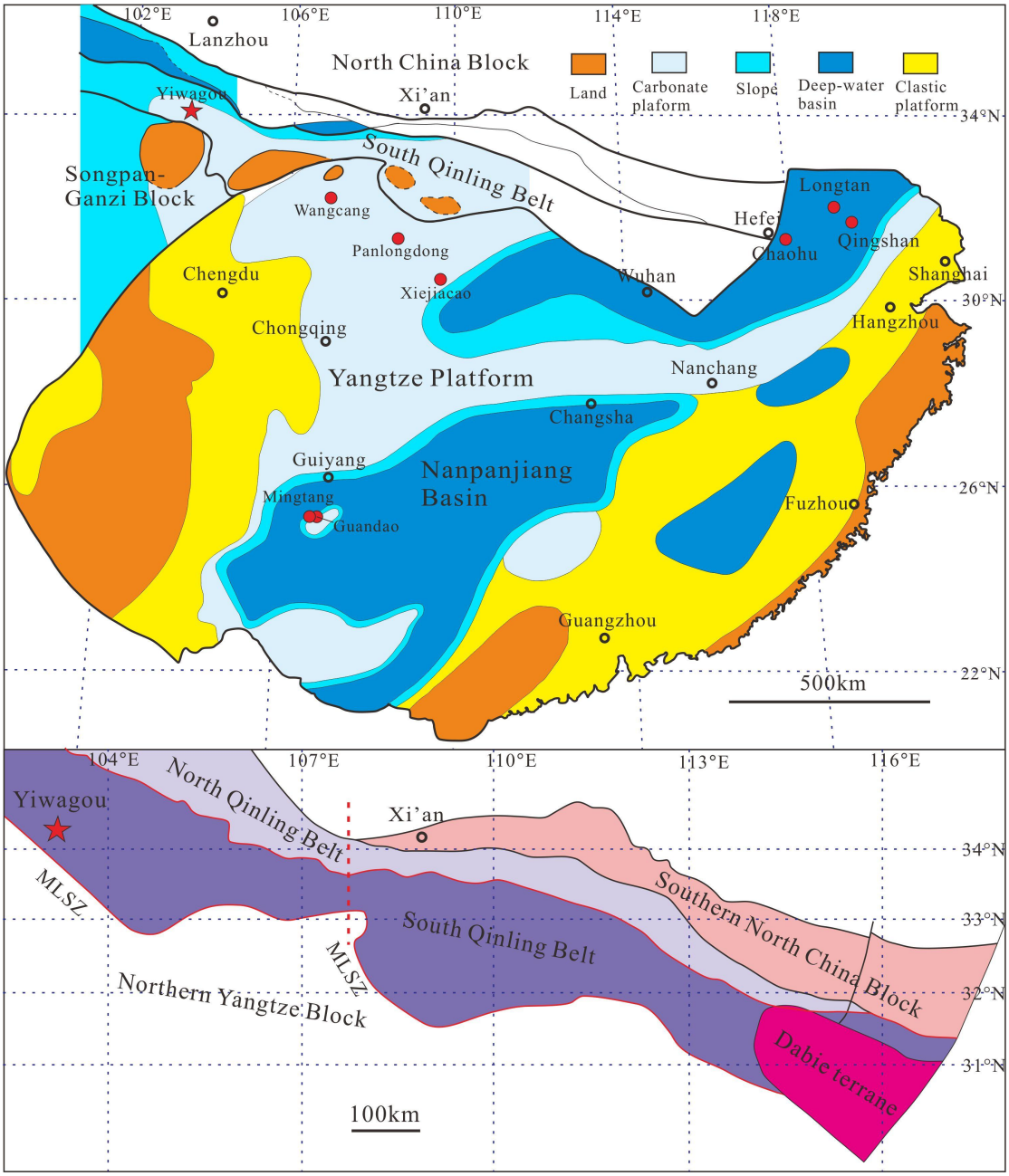
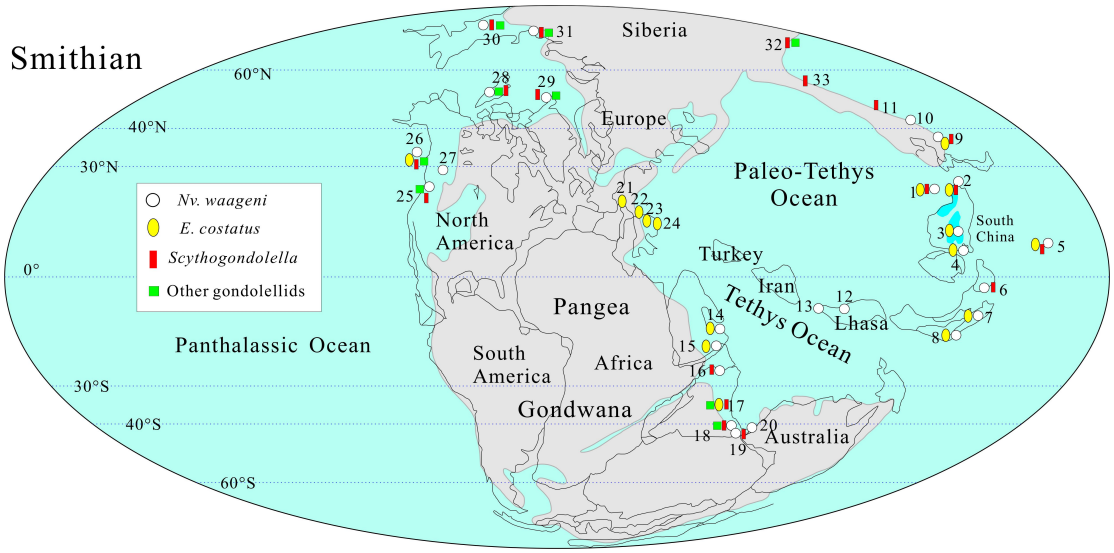

102°E
106°E
110°E
114°E
118°E
Lanzhou
North China Block
Land
Carbonate platform
Slope
Deep-water basin
Clastic platform
Yiwagou
Xi'an
34°N
South Qinling Belt
Songpan-Ganzi Block
Wangcang
Longtan
Hefei
Chaohu
Qingshan
Panlongdong
Chengdu
Xiejiacao
Wuhan
Shanghai
30°N
Chongqing
Hangzhou
Yangtze Platform
Nanchang
Changsha
Guiyang
Nanpanjiang Basin
Mingtang
Guandao
Fuzhou
26°N
Guangzhou
500km
22°N
104°E
107°E
110°E
113°E
116°E
Yiwagou
North Qinling Belt
Xi'an
34°N
MLSZ
Southern North China Block
South Qinling Belt
33°N
MLSZ
Northern Yangtze Block
32°N
Dabie terrane
31°N
100km

Figure2


Smithian
60°N
40°N
30°N
0°
30°S
40°S
60°S
Nv. waageni
E. costatus
Scythogondolella
Other gondolellids
Panthalassic Ocean
Siberia
Europe
North America
Pangea
South America
Africa
Gondwana
Australia
Paleo-Tethys Ocean
Tethys Ocean
Turkey
Iran
Lhasa
South China
1
2
3
4
5
6
7
8
9
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11
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Figure3

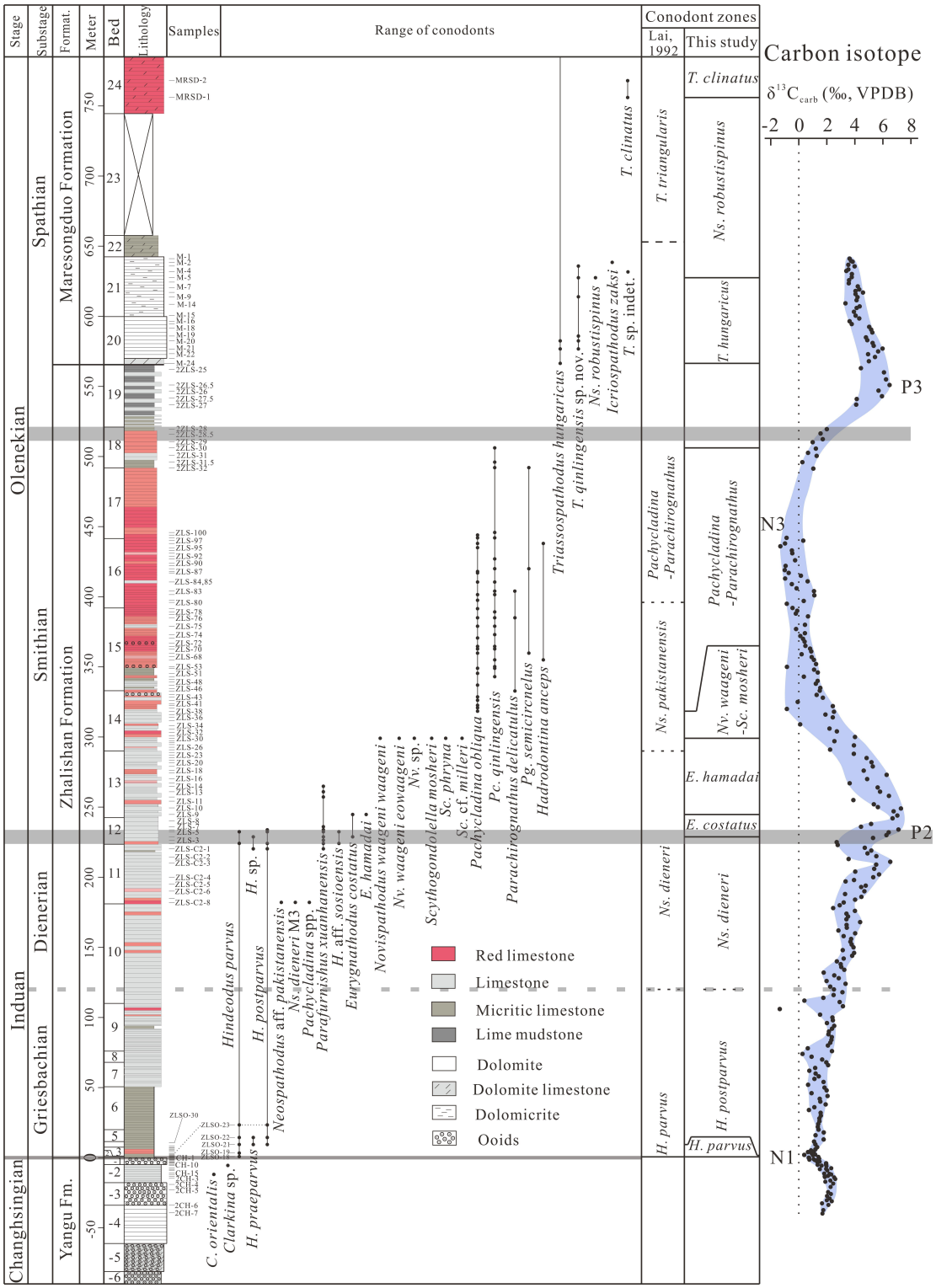
Stage
Substage
Format.
Meter
Bed
Lithology
Samples
Range of conodonts
Conodont zones
Lai, 1992
This study
Olenekian
Induan
Changhsingian
Spathian
Smithian
Dienerian
Griesbachian
Maresongduo Formation
Zhalishan Formation
Yangu Fm.
T. clinatus
T. triangularis
Ns. robustispinus
T. hungaricus
Pachycladina -Parachirognathus
Nv. waageni -Sc. mosheri
E. hamadai
E. costatus
Ns. dieneri
H. postparvus
H. parvus
Triassospathodus hungaricus
T. qinlingensis sp. nov.
Ns. robustispinus
Icriospathodus zaksi
T. sp. indet.
Pachycladina obliqua
Pc. qinlingensis
Parachirognathus delicatulus
Pg. semicircnelus
Hadrodontina anceps
Scythogondolella mosheri
Sc. cf. milleri
Sc. phryna
Novispathodus waageni waageni
Nv. waageni eowaageni
Nv. sp.
Eurygnathodus costatus
E. hamadai
H. aff. sosioensis
Parafurnishius xuanhanensis
Pachycladina spp.
Ns.dieneri M3
Neospathodus aff. pakistanensis
H. sp.
H. postparvus
Hindeodus parvus
C. orientalis
Clarkina sp.
H. praeparvus
Red limestone
Limestone
Micritic limestone
Lime mudstone
Dolomite
Dolomite limestone
Dolomicrite
Ooids
Carbon isotope
δ13Ccarb (‰, VPDB)
-2 0 2 4 6 8
P3
P2
N3
N1

Figure4

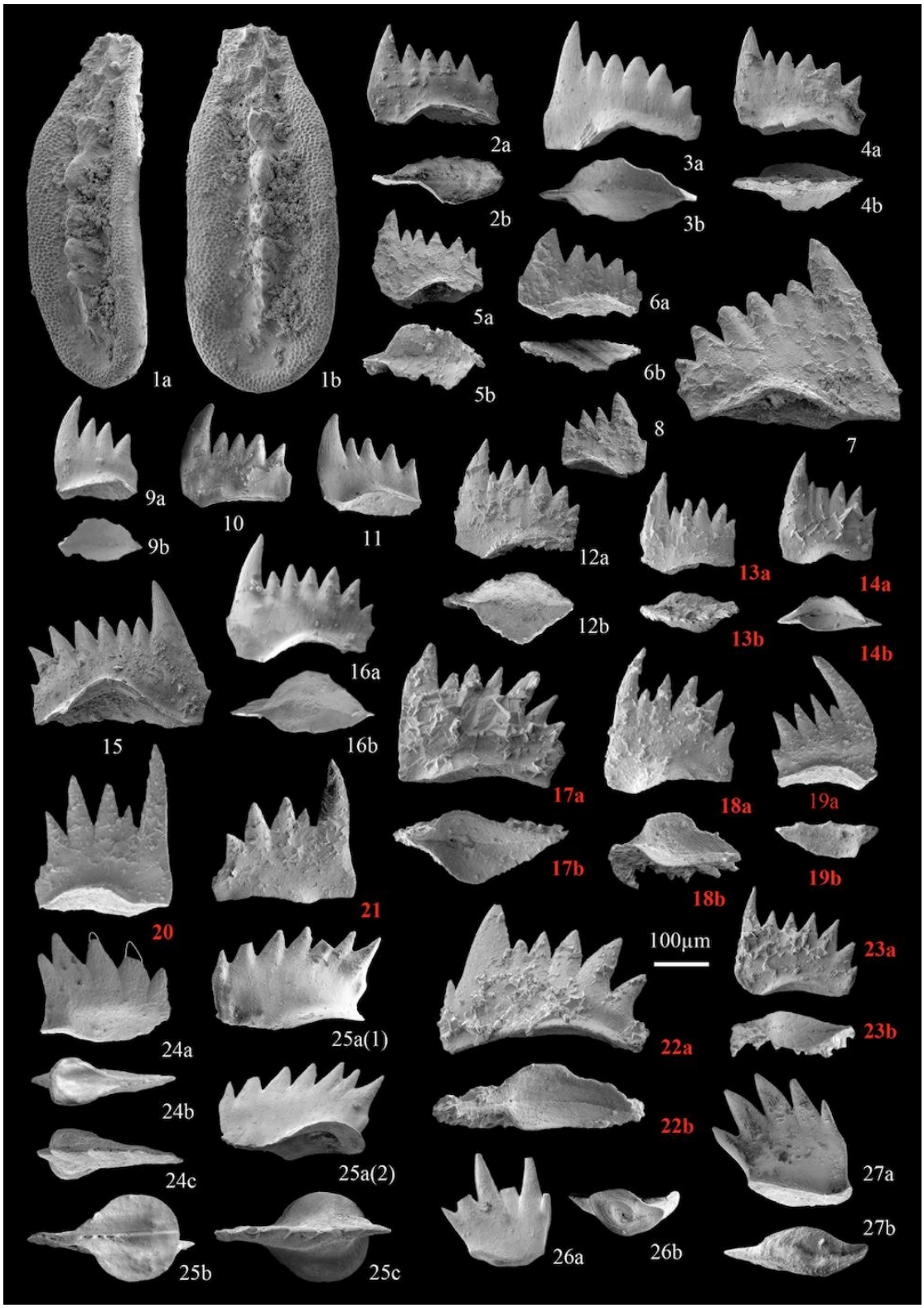
1a
1b
2a
2b
3a
3b
4a
4b
5a
5b
6a
6b
7
8
9a
9b
10
11
12a
12b
13a
13b
14a
14b
15
16a
16b
17a
17b
18a
18b
19a
19b
20
21
100μm
23a
23b
24a
24b
24c
25a(1)
25a(2)
22a
22b
27a
27b
25b
25c
26a
26b

Figure5

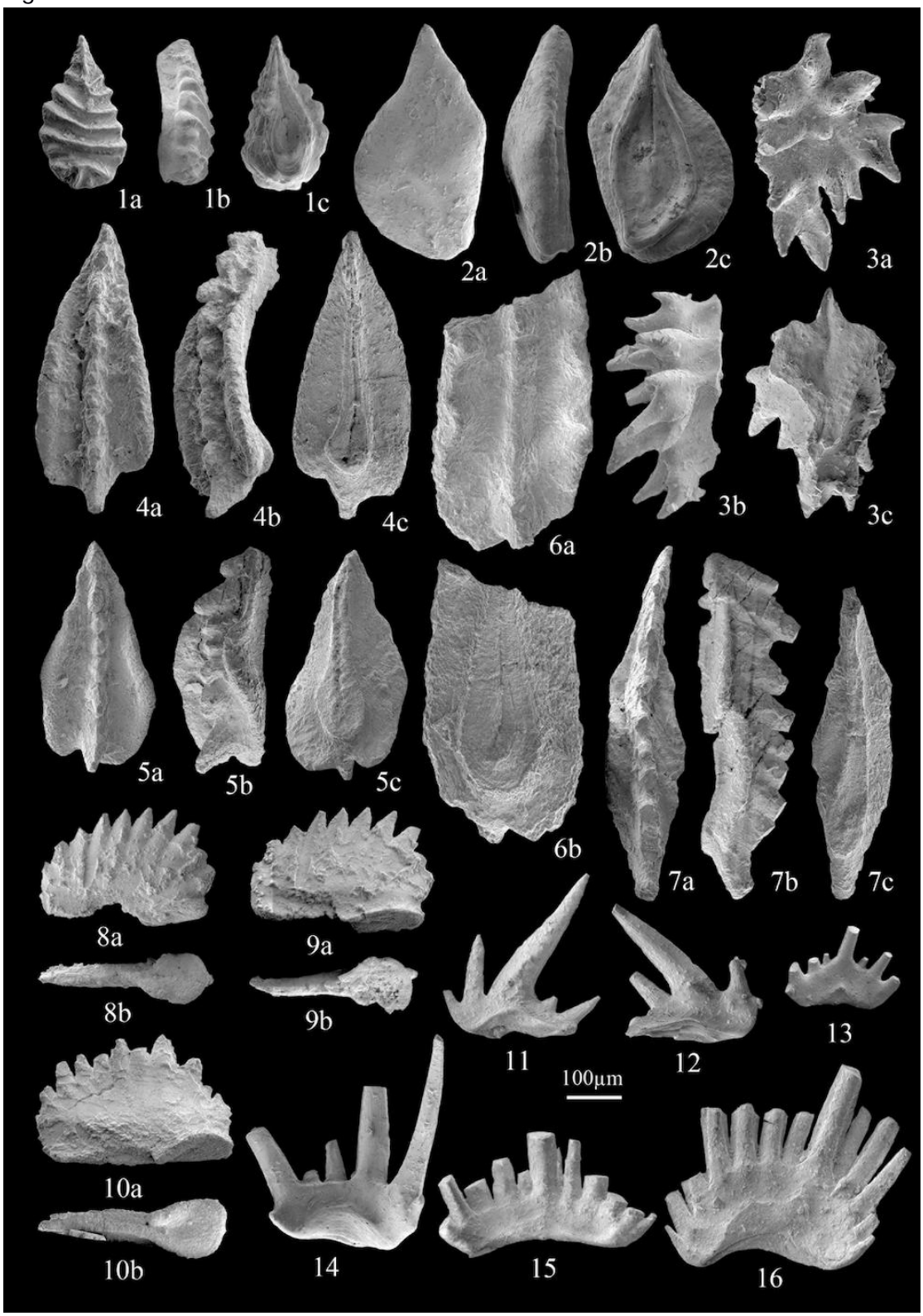
1a
1b
1c
2a
2b
2c
3a
4a
4b
4c
6a
3b
3c
5a
5b
5c
6b
7a
7b
7c
8a
9a
8b
9b
11
12
13
100μm
10a
10b
14
15
16

Figure6

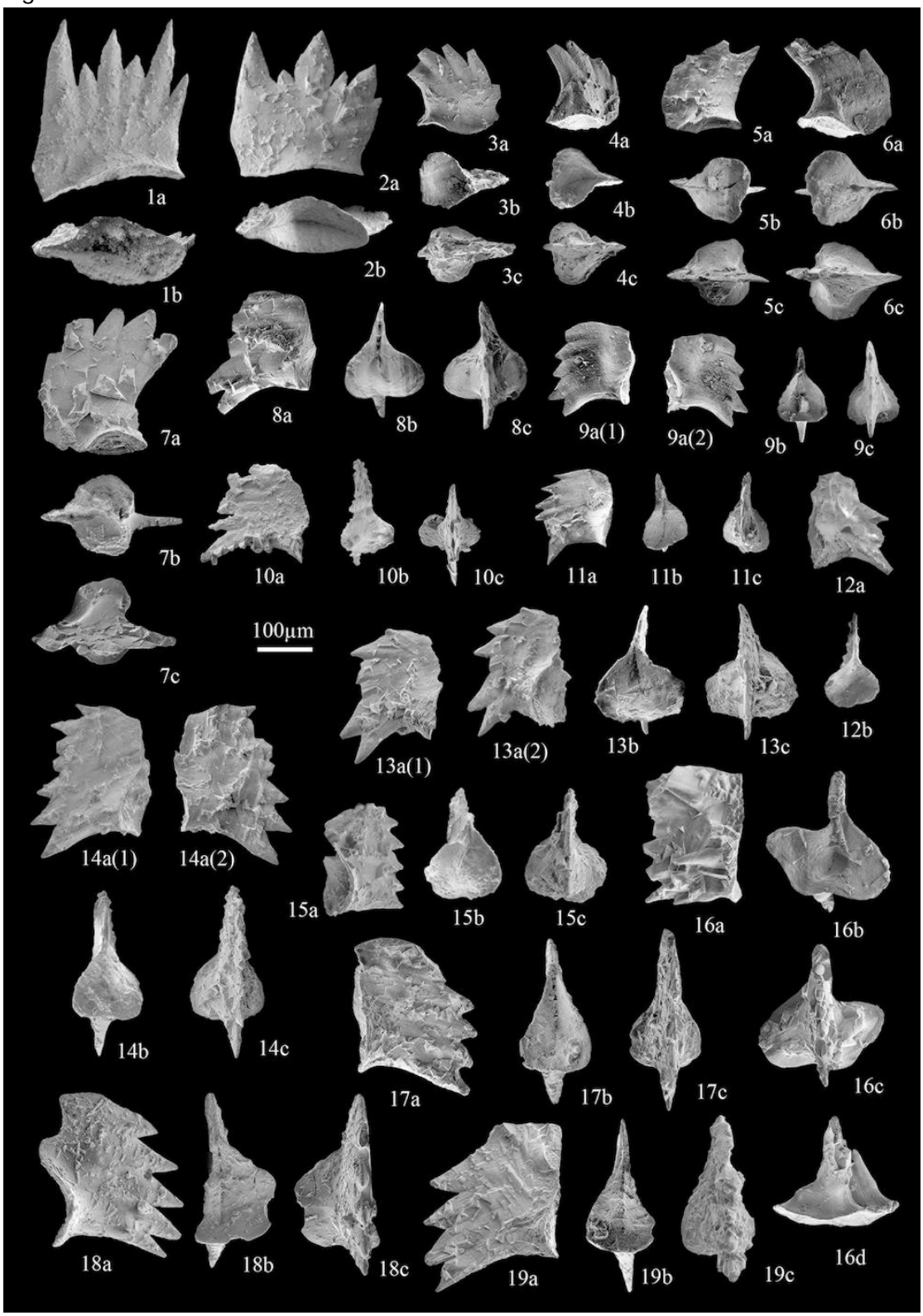
1a
2a
3a
4a
5a
6a
1b
2b
3b
4b
5b
6b
3c
4c
5c
6c
7a
8a
8b
8c
9a(1)
9a(2)
9b
9c
7b
10a
10b
10c
11a
11b
11c
12a
7c
100μm
13a(1)
13a(2)
13b
13c
12b
14a(1)
14a(2)
15a
15b
15c
16a
16b
14b
14c
17a
17b
17c
16c
18a
18b
18c
19a
19b
19c
16d

Figure7

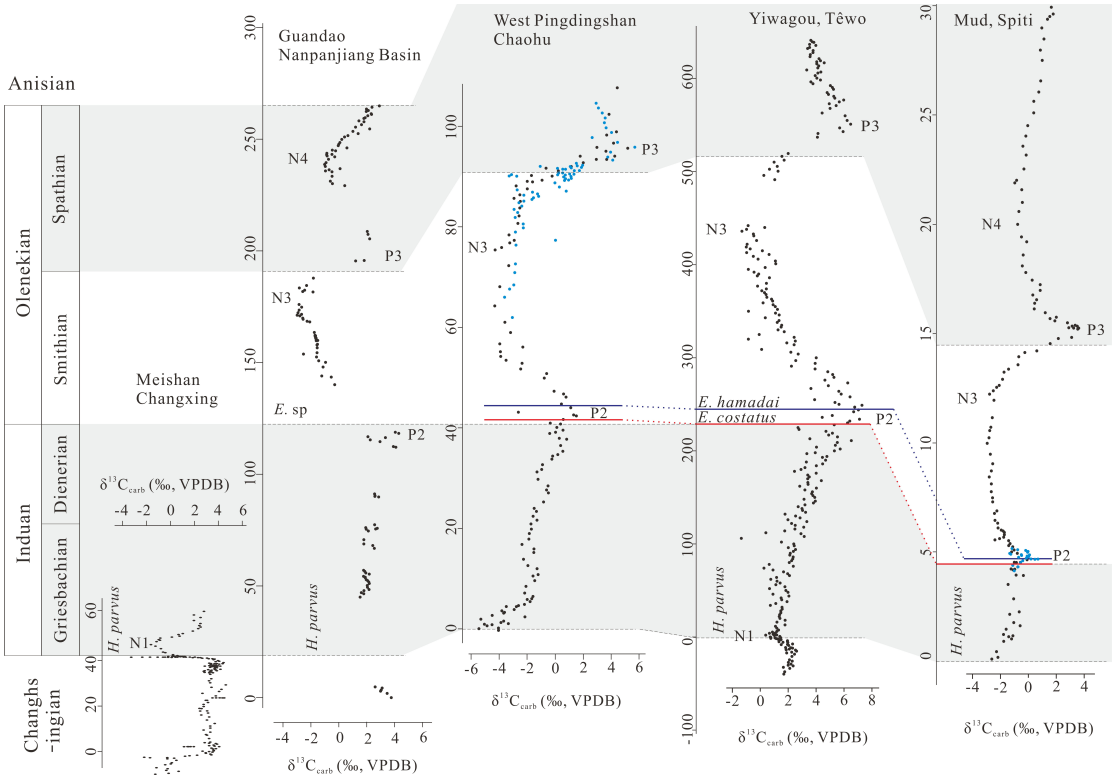

Table1

Series	Stage	Substage	Eastern Palaeo-Tethys					Western Palaeo-Tethys	Neo-Tethys	Panthalassa	
			Yiwagou, South Qinling		Meishan, Changxing	Chaohu	Nanpanjiang Basin	Slovenia	Spiti, India	British Columbia	Japan
			This study	Lai, 1992	Zhang et al., 2007; Yuan et al., 2014	Zhao et al., 2007	Chen et al., 2015; Lehrmann et al., 2015	Kolar-Jurkovšek and Jurkovšek, 2015; Chen et al., 2016	Krystyn et al., 2004 Sun et al., 2021	Orchard and Tozer, 1997; Orchard, 2008; Orchard and Zonneveld, 2009	Koike, 1988; Zhang et al., 2019b; Maekawa et al., 2021
Lower Triassic	Olenekian	Spathian	*T. clinatus*	*T. triangularis*		*T. homeri*	*Ch. gondolelloides*	*T. triangularis*	*T. sosioensis*	*T. symmetricus*	*T. homeri*
							T. triangularis	*T. homeri-Ns. robustispinus*	*T. triangularis*		
			Ns. robustispinus				*T. homeri*	*T. symmetricus*	*T. homeri*		*T. symmetricus*
			T. hungaricus				*I. collinsoni*	*T. hungaricus*	*Ic. collinsoni*	*T.* ex gr. *homeri*	*Nv. brevissimus*
						Nv. pingdingshanensis	*Nv. pingdingshanensis*	*Pl. regularis*	*Ng. jubata*		*Ic. collinsoni*
								Pl. corniger			*Nv. pingdingshanensis*
								Ns. robustus			
		Smithian	*Pachycladina-Parachirognathodus*	*Pachycladina-Parachirognathodus*		*Nv. w. waageni*	*Pachycladina-Parachirognathus*	*Foliella gardenae*	*Ns. spitiensis-Nv. waageni* / *Sc. milleri*	*Nv. waageni* / *Sc. mosheri* / *Sc. milleri*	*Sc. milleri*
							D. discreta				
			Nv. waageni-Sc. mosheri				*Nv. w. waageni*			*Sc. phryna*	*Nv.* ex gr. *waageni*
						Nv. w. eowaageni	*Nv. w. eowaageni*		*Nv. waageni-Ns. posterlongatus*	*Pu. meeki*	
										Sc. lachrymiformis	
			E. hamadai	*Ns. pakistanensis*				*E. hamadai*	*E. hamadai*	*B. nepalensis*	*E. hamadai*
			E. costatus					*E. costatus*	*E. costatus*		*E. costatus*
	Induan	Dienerian	*Ns. dieneri*	*Ns. dieneri*	*Ns. cristagalli-N. dieneri*	*Ns. dieneri* M3	*Ns. cristagalli-E. costatus*	*Ha. anceps*	*B. nepalensis*	*Ns. cristagali*	*Ns. dieneri*
						Ns. dieneri M2	*Ns. dieneri*		*Ns. pakistanensis*		
						Ns. dieneri M1			*Ns. cristagalli*	*Ns. dieneri*	
					Sw. kummeli	*Sw. kummeli*	*Sw. kummeli*		*Ns. dieneri*	*Sw. kummeli*	
		Griesbachian	*H. postparvus*		*C. tulongensis-C. planata*	*Nc. krystyni*	*Nc. discreta*	*H. post-parvus* / *Ha. aequabilis*	*Nc. krystyni*	*Ng. carinata*	*H. postparvus*
							Nc. krystyni	*I. staeschei-I. isarcica*			?
					I. isarcica		*H. sosioensis*	*I. lobata*	*I. staeschei*		*I. isarcica*
			H. parvus	*H. parvus*	*I. staeschei*	*H. typicalis*		*H. parvus*	*H. parvus*		*H. parvus*
					H. parvus		*H. parvus*				

Table2

Eastern Palaeo-Tethys						Western Palaeo-Tethys	
South Qinling Platform		Northern Yangtze Platform		Nanpanjiang Basin		Europe	
Genus	Species	Genus	Species	Genus	Species	Genus	Species
Triassospathodus	*hungaricus*	1	1	1	0	1	1
Neospathodus	*robustispinus*	1	1	1	0	1	1
	dieneri		1		1		0
Scythogondolella	*mosheri*	1	0.5(*Sc*. aff. *mosheri*)	0	0	0	0
	cf. *milleri*		0.5(*Sc. milleri*)		0		0
Novispathodus	*waageni*	1	1	1	1	0	0
Eurygnathodus	*costatus*	1	1	1	1	1	1
	hamadai		1		1		1
Parafurnishius	*xuanhanensis*	1	1	0	0	0	0
Hindeodus	*postparvus*	1	1	1	1	1	1
	parvus		1		1		1
Similarity to SQP		100.0%	90.9%	71.0%	54.5%	57.1%	54.5%